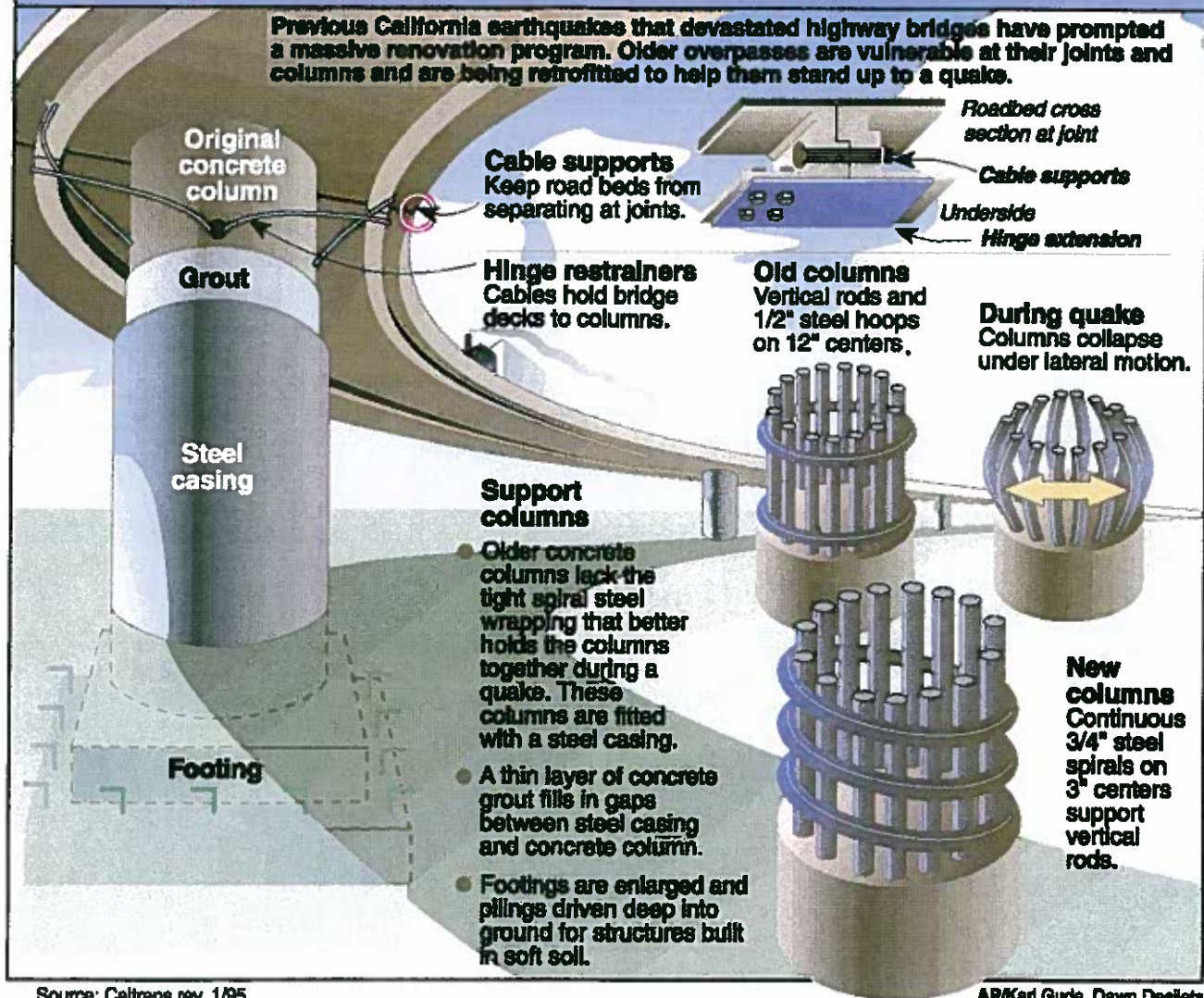


# CALIFORNIA DEPARTMENT OF TRANSPORTATION

## THIRD QUARTER 2009 NON-TOLL SEISMIC RETROFIT PROGRAM QUARTERLY REPORT

### Seismic Retrofitting of Freeway Structures



Source: Caltrans rev. 1/95

AP/Karl Gude, Dawn Deollets

Reporting Period Ending September 30, 2009

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## Report Overview

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This report provides information on the status and progress of delivering the California Department of Transportation's (Department) non-toll seismic retrofit programs. Other seismic retrofit programs under development by the Department included the following:

- The Phase 1 Seismic Retrofit Program is complete and is no longer reported.
- The Toll Bridge Seismic Retrofit Program Report is prepared and submitted separately by the Toll Bridge Program Oversight Committee as outlined in Section 30952.2 (b) (1) of the Streets and Highways Code.

This report fulfills the Department's statutory reporting requirement outlined in Assembly Bill (AB) 144 (Chapter 71, Statutes of 2005), which amended Section 188.5 (g) of the Streets and Highways Code as follows:

"(1) Commencing on January 1, 2004, and quarterly thereafter until completion of all applicable projects, the Department shall provide quarterly seismic reports to the transportation committees of both houses of the Legislature and to the commission for other seismic retrofit programs.

- (2) The reports shall include all of the following:
- (A) A progress report for each program.
  - (B) The program baseline budget for support and capital outlay construction costs.
  - (C) The current or projected program budget for support and capital outlay construction costs.
  - (D) Expenditures to date for support and capital outlay construction costs.

(E) A comparison of the current or projected schedule and the baseline schedule.

(F) A summary of milestones achieved during the quarterly period and any issues identified and actions taken to address those issues."

The Department currently has two active non-toll seismic retrofit programs as outlined below.

### Phase 2 Seismic Retrofit Program

The program consists of additional (beyond Phase 1) State-owned bridges that were determined to need seismic retrofit based on additional screening.

### Local Bridge Seismic Retrofit Program

The program consists of seismic retrofit of locally owned and Department of Water (DWR) bridges. This program is funded and implemented by the agencies having jurisdiction over the bridges.

### Background

California has more than 12,000 State-owned bridges on its State Highway System, plus an additional 11,500 city and county-owned bridges not on the State Highway System. Each bridge is inspected at least once every two years.

After the 1994 Northridge earthquake, the Department identified 1,155 State-owned bridges that became the Phase 2 program consisting of

mostly multicolumn bridges. Funding for this \$1.35 billion program came from a \$2 billion Proposition 192 bond, which was passed in 1996.

### **Seismic Evaluation**

The Seismic Retrofit Program involves strengthening the columns of existing bridges by encircling certain columns with a steel casing or, in a few instances, an advanced woven fiber casing. In addition to the column casing, some bridge footings are made bigger and given more support by placing additional pilings in the ground, or by using steel tie-down rods to better anchor the footings to the ground.

In a few projects, bridge abutments are made larger and the existing restrainer units are made stronger, because encasing the columns makes them stiffer and can change the way forces are transmitted within the bridge. Many seismic retrofits involve “hinge seat extensions,” which enlarge the size of the hinges that connect sections of bridge decks and help prevent them from separating during severe ground movement. The design of each bridge to be retrofitted is “site specific,” based on the maximum credible earth movement expected at that location. The design details depend on many factors, including the nearest active earthquake fault, type of geology beneath the bridge, and the original bridge design.

## Phase 2 Seismic Retrofit Program

### Progress Report

The Phase 2 Seismic Retrofit Program is 99 percent complete. To date 1,151 State-owned bridges, of 1,155 planned bridges, have been retrofitted under the Phase 2 program. Of the remaining four bridges, three are under construction (two contracts), and one bridge is in design.

### Milestones Achieved This Quarter

The High Street Separation Contract (two bridges) was advertised on April 20, 2009, bids were opened on July 29, 2009, and the project was subsequently awarded on August 20, 2009. The low bid was 32 percent below the engineer's estimate.

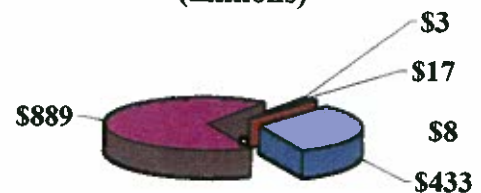
### Program Budget and Expenditures

The total budget for Phase 2 is \$1.35 billion. A total of \$889 million has been allocated for construction and right-of-way, and an additional \$433 million has been expended for support. The total of \$1.322 billion committed to date uses approximately 98 percent of the available program funds.

Of the remaining \$28 million, \$17 million is to be allocated for construction and right-of-way, and \$3 million is planned for support, leaving a reserve of \$8 million. This reserve is intended to cover cost changes, higher-than-anticipated bid results, any potential supplemental funds that may be needed, and arbitration settlements.

No program cost overruns are anticipated. All remaining funds will be used to complete the Phase 2 program.

**Program Costs  
(millions)**



■ Support Expenditures

■ Construction and  
Right-of-Way

□ Planned Support

□ Planned Construction and  
Right-of-Way

■ Reserve



## Program Funds

Funding for the Phase 2 Seismic Retrofit Program comes from three sources. Proposition 192, which the voters approved in March of 1996, provides bonds for \$1.21 billion. As shown in the table below, an additional \$140 million was expended from a combination of State (\$99.8 million) and federal (\$40.2 million) funds prior to the passage of Proposition 192. The total budget for Phase 2 is \$1.35 billion.

**Seismic Retrofit Funds**

<b>Funds</b>	<b>Budgeted \$ (millions)</b>	<b>Allocated \$ (millions)</b>
State	\$ 99.8	\$ 99.8
Federal	\$ 40.2	\$ 40.2
Bond	\$ 1,210.0	\$ 1,182.0
<b>Total</b>	<b>\$ 1,350.0</b>	<b>\$ 1,322.0</b>
<b>Available</b>		<b>\$ 28.0</b>

As bridges were evaluated for seismic retrofit design strategies, it was determined that for some bridges it would be more cost effective to replace the bridge than to retrofit. This is particularly true when the existing bridge needed nonseismic improvements for bridge repair or rehabilitation.

The additional cost for replacement is beyond the scope of funds available for the retrofit program. Consequently, bridge replacement costs were programmed in the State Highway Operation and Protection Program (SHOPP).

**Additional Bridge Replacement Funds  
Funded from SHOPP**

<b>Replacement Bridges</b>	<b>Program Year</b>	<b>Const \$ (million)</b>	<b>R/W \$ (million)</b>
Ten Mile	2005-06	\$ 20.2	\$ 0.2
Fifth Avenue	2006-07	\$ 126.0	19.8
High Street	2008-09	\$ 100.2	\$ 20.1
<b>Projects Allocated from SHOPP - \$286.5 million</b>			
Schuyler Heim	2009-10	\$ 270.0	\$ 42.0
<b>Projects Programmed in SHOPP - \$312.0 million</b>			

**Program Delivery by Region/District**

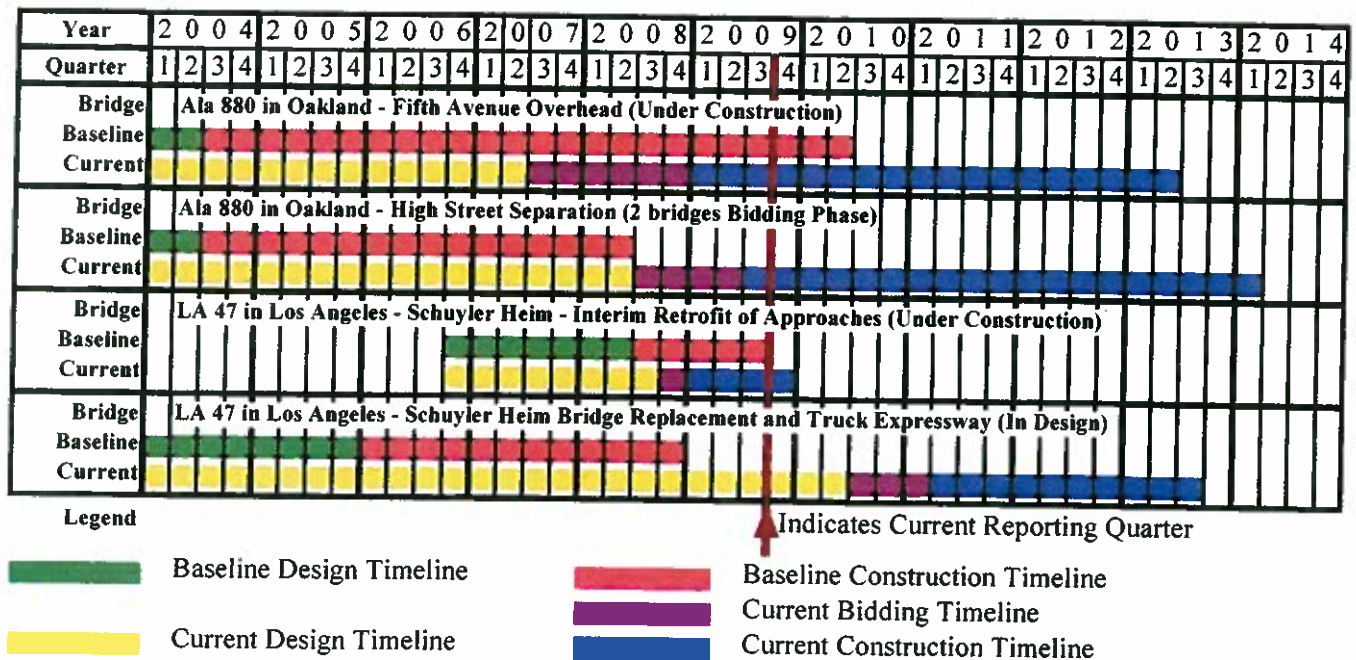
<b>Bridges By Region</b>	<b>#</b>	<b>Percent of Total</b>	<b>\$ (million)</b>	<b>Percent of Total</b>
North Coast	81	7	\$ 154	11
Bay Area	151	13	\$ 527	39
Central Valley	267	23	\$ 184	14
Southern California	656	57	\$ 485	36
<b>Total</b>	<b>1,155</b>	<b>100</b>	<b>\$ 1,350</b>	<b>100</b>

<b>Bridges By District Office</b>	<b>#</b>	<b>Percent of Total</b>	<b>\$ (million)</b>	<b>Percent of Total</b>
1 (Eureka)	69	6	\$ 139	11
2 (Redding)	12	1	\$ 15	1
3 (Marysville)	36	3	\$ 40	3
4 (Oakland)	151	13	\$ 527	39
5 (San Luis Obispo)	107	9	\$ 82	6
6 (Fresno)	77	7	\$ 18	1
7 (Los Angeles)	292	25	\$ 301	22
8 (San Bernardino)	131	11	\$ 86	6
9 (Bishop)	7	1	\$ 2	1
10 (Stockton)	40	4	\$ 42	3
11 (San Diego)	172	15	\$ 82	6
12 (Irvine)	61	6	\$ 16	1
<b>Total</b>	<b>1,155</b>	<b>100</b>	<b>\$ 1,350</b>	<b>100</b>

## Comparison of Current and Baseline Schedule

While the program is 99 percent complete, the few remaining bridges (1 percent) are taking substantially longer than originally planned, because they are total bridge replacement projects. The bridge replacement contracts face delivery

challenges, including environmental constraints, construction under heavy traffic conditions, and securing public and external agency input and acceptance for project approval.



Baseline date is planned schedule as of November 2001 (AB1171 approved)

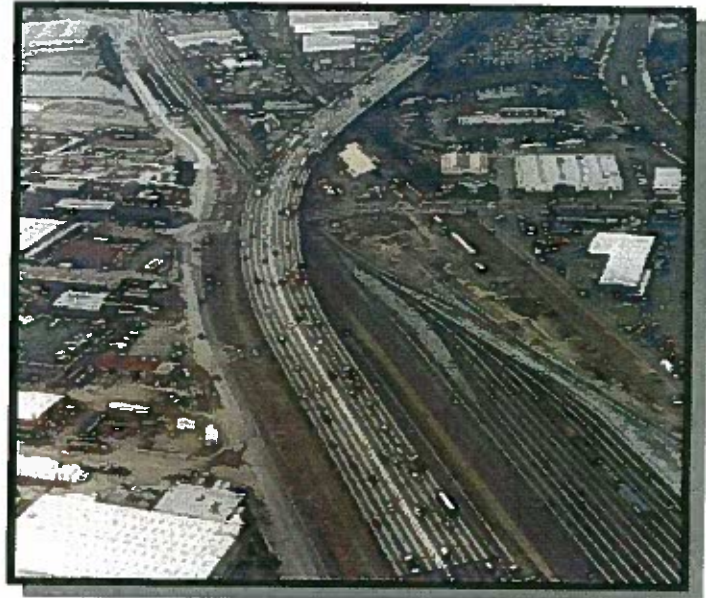
### Fifth Avenue Overhead

In Alameda County on Interstate 880 in Oakland.

Retrofit Strategy: Replace Bridge.

	End Design	End Constr	Budget (millions)
Baseline Schedule	Mid 04	Early 10	
Current Schedule	Mid 07	Mid 13	
<b>Funding:</b>	SHOPP	Seismic	Total
Construction	\$126.0	\$ 0.0	\$126.0
Right-of-Way	\$ 19.8	\$22.5	\$ 42.3
Mitigation	\$ 0.0	\$14.0	\$ 14.0
Support	\$ 15.3	\$ 7.0	\$ 22.3
Total	\$161.1	\$43.5	\$204.6

Number of Bridges to be Retrofitted – 1  
33 0027 Fifth Avenue Overhead



The construction contract is 10 percent complete.

### High Street Separation

In Alameda County on Interstate 880 in Oakland.

Retrofit Strategy: Replace Bridges.

	End Design	End Constr	Budget (millions)
Baseline Schedule	Mid 04	Mid 08	
Current Schedule	Mid 08	Early 14	
<b>Funding:</b>	SHOPP	Seismic	Total
Construction	\$73.2	\$ 0.0	\$73.2
Right-of-Way	\$20.1	\$20.0	\$40.1
Support	\$32.4	\$19.0	\$51.4
Total	\$125.7	\$39.0	\$164.7

Number of Bridges to be Retrofitted – 2  
33 0040L High Street Separation Overhead  
33 0040R High Street Separation Overhead



The contract was advertised on April 20, 2009, bids were opened on July 29, 2009, and the contract was subsequently awarded on August 20, 2009

### Schuyler Heim Bridge Interim Retrofit

In Los Angeles County on State Route 47 in Long Beach.

**Retrofit Strategy:** Reinforce bridge approaches.

	<b>End Design</b>	<b>End Constr</b>	<b>Budget (millions)</b>
Baseline Schedule	Late 08	Late 09	
Current Schedule	Mid 08	Late 09	

<b>Funding:</b>	<b>Total</b>
Construction	\$3.7
Right-of-Way	\$0.3
Support	\$2.0
Total	\$6.0

Number of Bridges to be Retrofitted – 0 – Interim Measure  
53 2618 Schuyler Heim Bridge

The Department initiated an interim retrofit project to enhance safety of the approach slabs to the bridge. This will provide an increased level of safety on an interim basis while the bridge replacement project is implemented.

The interim retrofit construction contract is 61 percent complete.



## Project in Design

### Schuyler Heim Bridge Replacement and Truck Expressway

In Los Angeles County on State Route 47 in Long Beach.

**Retrofit Strategy:** Replace Bridge.

Project includes elevated truck expressway to bypass at grade intersections.

	End Design	End Constr	Budget (millions)
Baseline Schedule	Late 05	Late 08	
Current Schedule	Mid 10	Late 13	

#### Funding:

Other	TCIF	SHOPP	Seismic	Total
Construction				
\$125.0	\$158.0	\$270.0	\$0.0	\$553.0
Right-of-Way				
\$ 44.0	\$ 0.0	\$ 42.0	\$0.0	\$ 86.0
Support*				
\$ 18.9	\$ 0.0	\$ 25.1	\$4.0	\$ 48.0
Totals				
\$187.9	\$158.0	\$337.1	\$4.0	\$687.0

\* Support costs for construction and right-of-way not identified in Trade Corridor Improvement Fund (TCIF) application.

Number of Bridges to be Retrofitted – 1  
53 2618 Schuyler Heim Bridge

A final environmental document for the combined project was completed by ACTA, and the initial public hearing was held on September 25, 2007. A decision was made based on the initial public hearing comments to prepare a Health Risk Assessment study. Another public hearing was conducted on January 15, 2009. The environmental document was approved in June 2009.

The National Resources Defense Council (NRDC) is challenging the findings in the Health Risk Assessment study and has filed a writ of mandate. Specific language in the filing indicates the NRDC is not challenging the replacement bridge portion of the project. The project will be split into two projects to separate the seismic project (replacement bridge) from the expressway portion that is being challenged.

The Alameda Corridor Transportation Authority (ACTA) is the lead agency in preparation of the environmental document and has been evaluating an elevated Truck Corridor Expressway to tie into a replacement bridge.



## Seismic Retrofit Program Budget, Expenditures and Current Estimates (Phase 2 Funds Only)

Bridges	Projects	Baseline Budget*	Current Budget*	Expenditures To Date*
<b>1,151</b>	<b>Completed Projects</b>			
	Capital Outlay Support		\$ 403.0	\$ 402.5
	Capital Outlay	\$ 865.0	\$ 842.3	\$ 827.7
	Pending Capital Outlay Mitigation		\$ 4.2	\$ 0.0
	Total		\$ 1,249.5	\$ 1,230.2
<b>4</b>	<b>Active Projects</b>			
<b>1</b>	<b>Fifth Avenue Overhead</b>			
	Capital Outlay Support		\$ 7.0	\$ 6.5
	Capital Outlay (R/W Only)	\$ 0.0	\$ 22.5	\$ 21.5
	Mitigation measures		\$ 14.0	\$ 0.0
	Total		\$ 43.5	\$ 28.0
<b>2</b>	<b>High Street Separations</b>			
	Capital Outlay Support		\$ 19.0	\$ 19.0
	Capital Outlay (R/W Only)	\$ 0.0	\$ 20.0	\$ 14.3
	Total		\$ 39.0	\$ 33.3
<b>Interim</b>	<b>Schuyler Heim Interim Retrofit Approaches</b>			
	Capital Outlay Support		\$ 2.0	\$ 0.5
	Capital Outlay	\$ 0.0	\$ 4.0	\$ 0.6
	Total		\$ 6.0	\$ 1.1
<b>1</b>	<b>Schuyler Heim Bridge replacement</b>			
	Capital Outlay Support		\$ 4.0	\$ 4.0
	Capital Outlay	\$ 66.0	\$ 0.0	\$ 0.0
	Total		\$ 4.0	\$ 4.0
<b>1,155</b>	<b>Program Totals</b>			
	Capital Outlay Support	\$ 419.0	\$ 435.0	\$ 432.5
	Capital Outlay	\$ 931.0	\$ 907.0	\$ 864.1
	Total	\$ 1,350.0	\$ 1,342.0	\$ 1,296.6

\* Note: All costs shown are in millions and include only the seismic retrofit program's portions of costs and expenditures.

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## Local Bridge Seismic Retrofit Program Status

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This report provides information on program delivery status of the Local Bridge Seismic Retrofit Program (LBSRP) for the 1,235 bridges that include the 479 bridges adopted by the California Transportation Commission (Commission) on May 28, 2008.

The 479 bridges adopted by the Commission were identified to receive bond funds to match federal Highway Bridge Program (HBP) funds for their right-of-way and construction phases. Additional investigation by the Department revealed that 11 bridges either were not owned by local agencies, the seismic retrofit had already been completed, or the bridge had been demolished or removed. In addition, 42 Bay Area Rapid Transit (BART) bridges in this program will be de-federalized as requested by BART and will be a new project undertaken by BART alone. No federal or State funds will be needed for that work. Therefore this report will reflect the program delivery of 1,193 bridges under LBSRP, which includes 426 bond bridges from here on.

The Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006 provides \$125 million of State matching funds to complete the LBSRP with bond funds. The bond program budget of \$125 million is to be allocated to provide the 11.47 percent required local match for right-of-way and construction phases of remaining seismic retrofit work on local bridges, ramps, and overpasses and

includes \$2.5 million set aside for bond administrative costs. An additional \$32.9 million State match through annual exchange of a portion of local share of funds received from federal HBP fund is also available to accommodate the current remaining required local match needs. The Commission has allocated \$13.5 million bond funds for fiscal year (FY) 2007-08 and \$21 million bond funds for FY 2008-09. Consistent with the Local Bridge Seismic Retrofit Guidelines, the Department has exchanged \$24.3 million of local share of funds received through the federal HBP for State funds to accommodate local match needs for BART bridges. To date, \$15.2 million of seismic bond funds have been sub-allocated.

This report fulfills the Department's statutory reporting requirement outlined in Assembly Bill (AB) 144 (Chapter 71, Statutes of 2005), which amended Section 188.5 (g) of the Streets and Highways Code as follows:

*"(1) Commencing on January 1, 2004, and quarterly thereafter until completion of all applicable projects, the Department shall provide quarterly seismic reports to the transportation committees of both houses of the Legislature and to the commission for other seismic retrofit programs.*

# Local Bridge Seismic Retrofit Program Progress Report

LBSRP is 61 percent complete. To date, 733 local bridges, of 1,193 planned bridges, have been retrofitted under LBSRP. There are 172 bridges under construction, 281 bridges under design, and seven bridges in a pre-strategy phase.

## LBSRP Milestones Achieved This Quarter

As of September 30, 2009, the status of local bridges by phases is as follows:

	2005	2006	2007	2008	2009
Complete	692	699	709	724	733
Construction	46	45	66	124	172
Design	291	295	333	349	281
Pre-Strategy	206	196	127	38	7
Total	1,235	1,235	1,235	1,235	*1,193

\*42 BART bridges were removed from the retrofit list in 2009.

## Milestones Achieved This Quarter for Bond-Funded Bridges

As of September 30, 2009, the status of local bridges by phases is as follows:

	2005	2006	2007	2008	2009
Complete	0	0	0	4	11
Construction	0	0	15	99	127
Design	0	0	271	327	281
Pre-Strategy	0	0	193	38	7
Total	0	0	479	*468	**426

\* Investigation by the Department removed 11 bridges.

\*\*42 BART bridges were removed from the retrofit list in 2009.

## LBSRP Program Budget and Expenditures

The estimated budget for the overall LBSRP is \$1,956.6 million. To date, \$796.2 million has been encumbered (spent).

Funds (millions)	Spent	Plan	Total
State	\$67.1	\$25.8	\$92.9
Bond	\$15.2	\$107.3	\$122.5
Federal	\$713.9	\$1,027.3	\$1,741.2
Total	\$796.2	\$1,160.4	\$1,956.6

## Funds Committed to Bond Projects (millions)

Component	Available	Allocated	Percent
LBSRP Bond	\$122.5	\$34.5	28
State Funds	\$32.9	\$24.3	74
LBSRP Bond Support	\$2.5		
Total	\$157.9	\$58.8	37



**Overall Program Delivery by Agency Group (Includes all bridges in LBSRP)**

Bridges By Agency Group	Number Of Agencies	Pre Strategy	In Design	In Construction		Complete or No Retrofit		Total # Bridges	Percent Program
		Bond	Bond	Bond	Non- Bond	Bond	Non- Bond		
All Other Agencies	59	7	122	20	31	4	613	797	67
Los Angeles Region (City and County)	2	0	15	45	14	3	109	186	16
DWR	1	0	24	0	0	1	0	25	2
BART	1	0	120	62	0	3	0	185	15
<b>Total</b>	<b>63</b>	<b>7</b>	<b>281</b>	<b>127</b>	<b>45</b>	<b>11</b>	<b>722</b>	<b>1,193</b>	<b>100</b>

*Projects in the pre-strategy and design phase will qualify for bond match when they advance to right-of-way and construction phase.*

- One agency, BART is responsible for 185 bridges (15 percent of the entire program). The remaining 130 BART bridges in design phase were programmed to go to construction this federal fiscal year (FFY). Only ten of the 130 were authorized for construction. BART could not obtain right-of-way certification for the remaining 120 bridges in time to submit the projects for authorization in the 20009 FFY. They expect the right of way certification will be ready in the 2010 FFY so they can proceed to construction with their remaining bridges.
- Construction of nine DWR bridges that were planned to go to construction this year has been delayed due to DWR's concerns regarding the federal Disadvantage Business Enterprise requirements. DWR has informed the Department that they plan to complete final design and will comply with federal DBE requirements.